

Salt River Project

Advanced Data Acquisition and Management Program

Scope of Work

Salt River Project's (SRP's) Advanced Data Acquisition and Management Program involved deployment of an advanced metering infrastructure (AMI) system, a meter data management system (MDMS), and an energy management web portal for customers. The new two-way communication system relays customer electricity data to the utility, where upgraded software platforms analyze and process the data for billing and other back office systems. SRP also expanded the existing time-of-use rates to include AMI interval data for a time-of-day rate, empowering customers to help reduce peak demand on the system. Integration of the AMI and MDMS infrastructure with SRP's customer information system (CIS) has enabled full end-to-end system automation for core metering functions such as remote connect/disconnect.

Objectives

The AMI system reduces the need for manual meter reading and allows for remote diagnostics and troubleshooting of meter maintenance issues, reducing operating and maintenance costs and associated vehicle emissions. AMI also enables development of advanced electric services for customers, such as time-based rates and interval data presentment on the web portal. SRP can now monitor AMI transformer load data to measure system efficiencies and identify and isolate energy loss. In addition, AMI sub-metering is being monitored and evaluated to assess high desert temperatures' affects on customer air conditioning units and energy consumption. This information will support future SRP efforts to improve reliability and manage peak demand.

Deployed Smart Grid Technologies

- **Communications infrastructure:** A two-way radio frequency (RF) mesh communications network was expanded across the entire SRP service territory, along with cellular backhaul, to support the AMI deployment.
- **Advanced metering infrastructure:** SRP deployed nearly 459,000 AMI meters, a head-end system, and an MDMS. Using the new AMI system, SRP can improve distribution planning and operations, allow for development and deployment of time-based rate programs, and provide for improved outage management capabilities. SRP is also piloting smart meters on select transformers to assess transformer engineering and sizing methodologies and system loss.
- **Advanced electricity service options:** New AMI features include remote service switches that enable SRP to respond to customer connect/disconnect requests and outage notifications more quickly and efficiently. The web portal

At-A-Glance

Recipient: Salt River Project

State: Arizona

NERC Region: Western Electricity Coordinating Council

Total Project Cost: \$114,003,719

Total Federal Share: \$56,859,359

Project Type: Advanced Metering Infrastructure
Customer Systems

Equipment

- 458,742 Smart Meters
 - AMI Communications Systems
 - Meter Communications Network (RF Mesh)
 - Backhaul Communications (Cellular)
 - Meter Data Management System Integrated with Primary Customer Information System
 - Customer Web Portal
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Time-Based Rate Programs

- Time of Use
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Key Benefits

- Reduced Meter Reading Costs
 - Reduced Operating and Maintenance Costs
 - Reduced Truck Fleet Fuel Usage
 - Improved Customer Service Options
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Salt River Project *(continued)*

allows customers to view their electricity consumption, trending data, conservation tips, and other information for more informed decision making.

- **Time-based rate programs:** Existing time-of-use rate programs were expanded for customers receiving new meters. The programs incentivize participating customers to shift their electricity usage from peak- to off-peak periods, reducing overall electricity costs, providing customers with greater control over their consumption and bills, and limiting the costs and emissions from adding peak generation capacity.

Benefits Realized

- **Reduced meter reading costs:** SRP is now able to remotely and reliably read over 450,000 meters using the AMI system, resulting in reduced meter reading costs for the utility.
- **Reduced operating and maintenance costs:** SRP has been able to remotely diagnose and troubleshoot a variety of meter maintenance issues that would have required field visits under the manual system.
- **Reduced truck fleet fuel usage:** Remote meter reading, troubleshooting, service connects, and service disconnects have all contributed to a reduced need for SRP to roll trucks. Additionally, operations personnel can remotely ping meters during outages to confirm service restoration rather than deploy field crews or call customers for verification.
- **Improved customer service options:** SRP can now offer its customers expanded time-based rates using interval data from the AMI system. Remote connect/disconnect enables faster response to customer requests for service. The new web portal offers customers better tools for home energy management and opportunities to lower their monthly bills.

Lessons Learned

- Change is difficult. New technology deployment that impacts all departments within the utility will create transformational opportunities and challenges; business rules and system principles will be questioned. Executive leadership, structured project management, and key stakeholder engagement are critical to project success.
- Vendors should play an active part in roadmap development. Build strong vendor relationships and attempt to align incentives for successful deployment.
- “Customer First” thinking is key to planning. Good customer communications results in a high rate of customer acceptance.
- Enterprise data and systems security must be considered early in the project timeline and fully integrated into system design and deployment efforts.
- New skill sets will be required and intellectual property developed. Piloting new technology early was of value in developing key AMI technology and data knowledge among SRP personnel.
- Realistic, achievable deployment goals should be developed in cooperation with the existing workforce, regardless of whether a utility chooses to outsource meter installations or keep the work in-house.
- Costs and logistics for the retirement of the old meters and meter reading system must be considered in project planning. This effort can be resource- and space-intensive.
- Smart grid technologies will continue to evolve, so flexibility should be built into the system where possible.

Salt River Project *(continued)***Future Plans**

SRP plans to continue providing customers with reliable electricity at an affordable rate by using enabling technologies installed as part of the smart grid project. SRP aims to leverage the AMI system to transform how customers use energy and how it serves its customers through a much more interactive customer experience.

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